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BUREAU OF MINES MINERALS YEARBOOK

The Mineral Industry of Maine

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UNITED STATES DEPARTMENT OF THE INTERIOR • Donald Paul Hodel, Secretary

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This publication is a chapter from the current Bureau of Mines Minerals Yearbook, comprising *Volume I, Metals and Minerals; Volume II, Area Reports: Domestic; Volume III, Area Reports: International.* The separate volumes of the Yearbook are sold by the Superintendent of Documents, Washington, D.C. 20402.

The Mineral Industry of Maine

This chapter has been prepared under a Memorandum of Understanding between the Bureau of Mines, U.S. Department of the Interior, and the Maine Geological Survey for collecting information on all nonfuel minerals.

By L. J. Prosser,[1] Walter Anderson,[2] and Carolyn Lepage[3]

The value of nonfuel mineral production in Maine in 1984 was $37.9 million, a 44% increase over that of 1983. The increase reflected improved demand from the construction industry, which consumes most of the State's production. The possibility for development of a metal mine in Maine diminished as exploration activity waned in the second half of the year.

Table 1.—Nonfuel mineral production in Maine[1]

Mineral	1983 Quantity	1983 Value (thousands)	1984 Quantity	1984 Value (thousands)
Clays thousand short tons	43	$93	43	$97
Sand and gravel (construction) do.	e4,800	e12,100	7,885	19,228
Stone (crushed) do.	848	2,851	e1,300	e4,400
Combined value of other nonmetals	XX	11,319	XX	14,214
Total	XX	26,363	XX	37,939

eEstimated. XX Not applicable.
[1]Production as measured by mine shipments, sales, or marketable production (including consumption by producers).

Table 2.—Value of nonfuel mineral production in Maine, by county

(Thousands)

County	1982	1983	Minerals produced in 1983 in order of value
Androscoggin	W	$30	Clays.
Aroostook	$948	W	Stone (crushed).
Cumberland	W	W	Stone (crushed), clays.
Franklin	W	W	Garnet.
Hancock	524	W	Stone (dimension).
Kennebec	564	W	Do.
Knox	W	W	Cement, stone (crushed).
Lincoln	598	(1)	
Oxford	284	(1)	
Penobscot	2,011	(1)	
Piscataquis	284	(1)	
Sagadahoc	W	(1)	
Somerset	1,297	(1)	
Waldo	W	W	Peat.
Washington	716	814	Peat, stone (dimension).
York	2,819	(1)	
Undistributed[2]	21,660	13,419	
Sand and gravel (construction)	XX	e12,100	
Stone (crushed)	e4,000	XX	
Total	r35,705	26,363	

eEstimated. rRevised. W Withheld to avoid disclosing company proprietary data; included with "Undistributed." XX Not applicable.

[1]Construction sand and gravel was produced; data not available by county. Total State value is shown separately under "Sand and gravel (construction)."

[2]Includes gem stones that cannot be assigned to specific counties and values indicated by symbol W.

Table 3.—Indicators of Maine business activity

		1982r	1983	1984p
Employment and labor force, annual average:				
Population	thousands	1,136	1,145	1,156
Total civilian labor force	do.	516	537	552
Unemployment	do.	44	48	34
Employment (nonagricultural):				
Mining total	do.	.1	.2	.2
Manufacturing total	do.	108.6	109.2	110.4
Primary metal industries[1]	do.	24.8	20.9	NA
Stone, clay, and glass products[1]	do.	7.8	6.6	NA
Chemicals and allied products[1]	do.	13.1	12.5	NA
Petroleum and coal products[1]	do.	.8	.8	NA
Construction	do.	16.7	16.9	19.4
Transportation and public utilities	do.	18.5	18.4	19.3
Wholesale and retail trade	do.	90.5	94.5	102.1
Finance, insurance, real estate	do.	17.5	18.1	19.6
Services	do.	81.5	84.6	90.5
Government and government enterprises	do.	82.1	83.1	84.0
Total	do.	415.5	425.0	445.5
Personal income:				
Total	millions	$10,532	$11,335	$12,505
Per capita		$9,268	$9,900	$10,813
Hours and earnings:				
Total average weekly hours, production workers		40.0	39.9	39.9
Total average hourly earnings, production workers		$7.22	$7.61	$8.05
Earnings by industry:				
Farm income	millions	$77	$56	$108
Nonfarm	do.	$7,115	$7,751	$8,566
Mining total	do.	$3	$3	$3
Manufacturing total	do.	$2,094	$2,252	$2,449
Primary metal industries	do.	$8	$10	$14
Stone, clay, and glass products	do.	$20	$20	$22
Chemicals and allied products	do.	$16	$19	$20
Petroleum and coal products	do.	$5	$7	$8
Construction	do.	$369	$399	$499
Transportation and public utilities	do.	$441	$483	$524
Wholesale and retail trade	do.	$1,129	$1,244	$1,386
Finance, insurance, real estate	do.	$305	$351	$402
Services	do.	$1,310	$1,433	$1,605
Government and government enterprises	do.	$1,413	$1,510	$1,618

See footnotes at end of table.

Table 3.—Indicators of Maine business activity —Continued

		1982[r]	1983	1984[p]
Construction activity:				
Number of private and public residential units authorized		3,171	4,174	5,902
Value of nonresidential construction	millions	$147.2	$184.6	$161.5
Value of State road contract awards	do.	$38.1	$45.8	$22.0
Shipments of portland and masonry cement to and within the State	thousand short tons	206	231	275
Nonfuel mineral production value:				
Total crude mineral value	millions	$35.7	$26.4	$37.9
Value per capita		$31	$23	$33

[p]Preliminary. [r]Revised. NA Not available.
[1]Bureau of Economic Analysis, Regional Economic Measurement Division, U.S. Department of Commerce.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Highway and Heavy Construction Magazine, and U.S. Bureau of Mines.

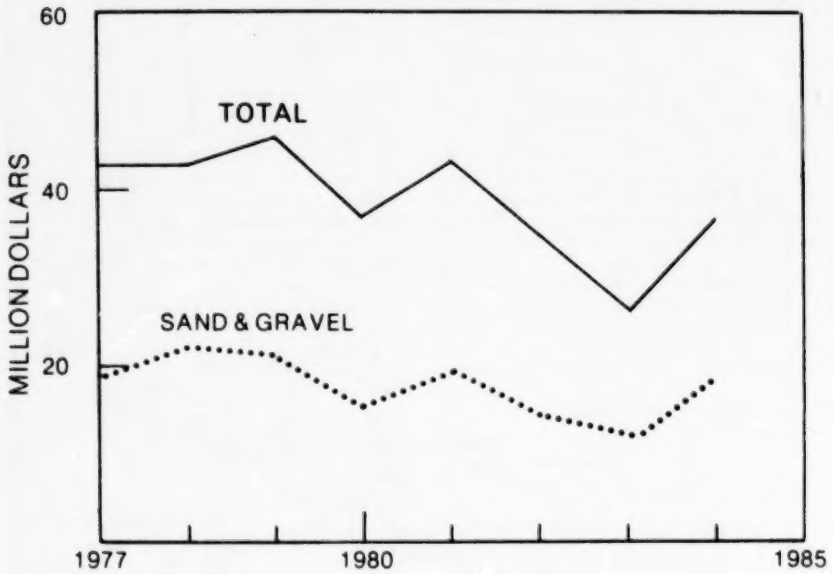

Figure 1.—Value of sand and gravel and total value of nonfuel mineral production in Maine.

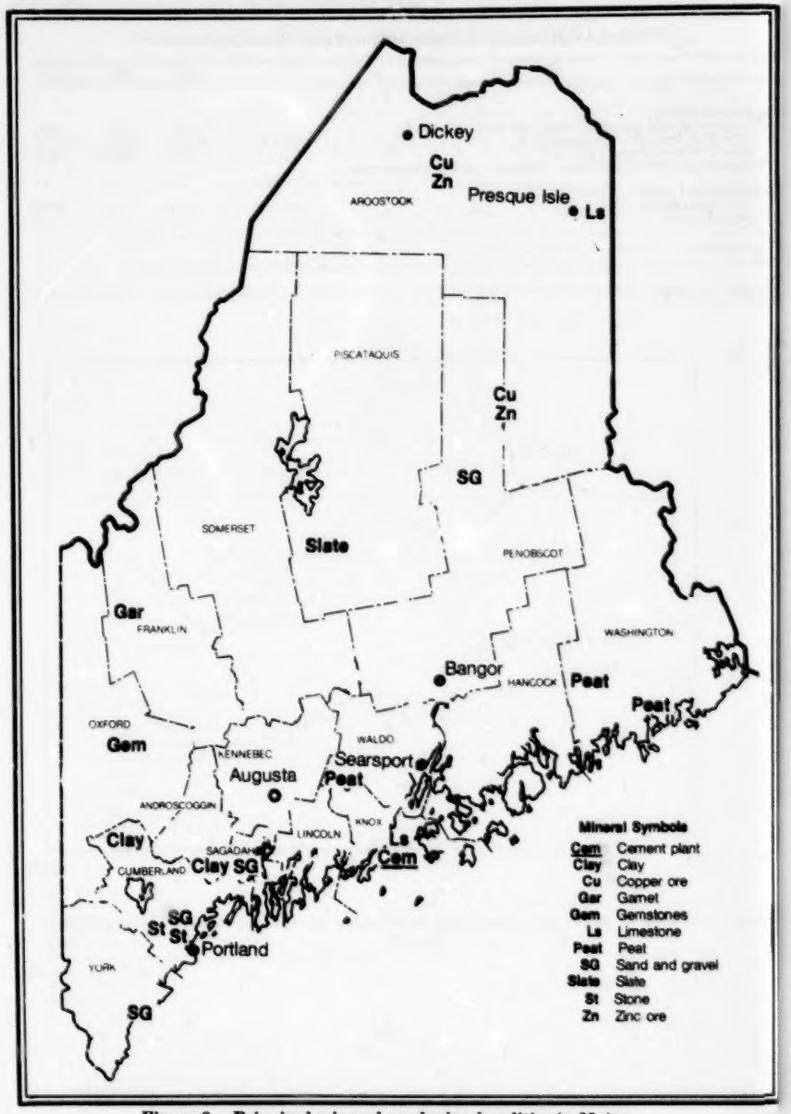

Figure 2.—Principal mineral producing localities in Maine.

Trends and Developments.—Maine's mineral industry, as was typical of the New England region, increased production in response to demand for construction mineral commodities. Construction activity in Maine (see table 3) improved significantly in 1984 compared with that of 1983; correspondingly, cement, crushed stone, and construction sand and gravel output increased 41%, 53%, and 64%, respectively.

Exploration Activities.—At yearend 1983, Freeport Exploration Co., a division of Freeport McMoRan Inc., and Getty Mining Co., a subsidiary of Getty Oil Co., both announced plans to intensify exploration in 1984. Freeport used reverse circulation drilling to determine if higher grades of precious metals existed at the 36-million-ton copper-zinc deposit discovered at Bald Mountain in northern Maine by Superior Mining Co. and Louisiana Land & Exploration Co. in 1977. Upon completion of drilling about 70 new holes and a feasibility study, the precious metal zone of the deposit was not considered as promising as expected and activity was halted. The property leased by Freeport reverted to Superior Mining and Louisiana Land & Exploration.

Getty Mining discovered a multimetallic ore deposit including precious metals north of Patten at Mount Chase. In July, Texaco Inc. acquired Getty, and work on the Mount Chase project by yearend was minimized with only water quality monitoring continuing. Texaco announced plans to divest itself of Getty subsidiaries, and projects such as Mount Chase were expected to be sold on an individual basis.

The Mineral Resource Div. of Boise Cascade Corp. began a 5-year reconnaissance program to assess the mineral potential of its corporate lands in Maine. The Penobscot Indian Nation's Mining and Minerals program completed the first year of a total mineral resource evaluation of Penobscot and Passamaquoddy Indian Trust Lands. The tribal Trust Lands comprise about 120,000 acres scattered across the central part of the State.

A number of other companies continued exploring for base and precious metals in Maine. Chevron Resources Co. took over as operator of Superior Mining and Louisiana Land & Exploration lands outside of the Bald Mountain joint venture. Chevron also has leases on other Aroostook County lands.

Utah International Inc. concentrated its search for base and precious metals in the Jim Pond area in northern Franklin County. Noranda Exploration Inc. conducted programs in central Somerset and northern Franklin Counties.

F. M. Beck Inc. was actively involved in contract exploration work for several clients in the State. This work included the Mount Chase deposit and other Getty properties in Maine. Appalachian Resources Inc. and J. S. Cummings Inc. were also active in the State.

Scintilore Exploration Ltd. conducted limited exploration for silver at its Big Hill property in Pembroke, eastern Washington County, and concentrated on arranging financing.

Legislation and Government Programs.—In 1984, the Maine Legislature enacted Public Law, chapter 819, giving the Land Use Regulation Commission sole regulatory responsibility for sand and gravel pits, stream alterations, and projects affecting lakes and ponds in the State's 10.3 million acres of unorganized townships and plantations. Previously, these activities were regulated by three separate agencies under the Site Location Law, the Great Ponds Act, and the Alteration of Rivers and Streams Act.

Highlights of Maine Geological Survey's (MGS) activities in 1984 included publication of a five-volume atlas on Maine's peat resources. Information for the atlas was collected through a 5-year research project funded by the U.S. Department of Energy. This comprehensive assessment of Maine's peat resources provided maps and data on 235 peat deposits, covered 73,000 acres, and identified 136 million air-dried tons of commercial-quality peat. Peat deposits suitable for energy were the primary focus of the study, but the information gathered was also useful to those interested in peat for agricultural, horticultural, and other applications.

The MGS entered a cooperative agreement with the U.S. Geological Survey to update and add information to the nationwide Mineral Resources Data System. In 1984, work began on recording information on location, exploration, development, and geology for each metallic deposit.

During 1984, the MGS released 11 open-file maps primarily relating to the hydrology and geology of Maine and completed new black and white 1:500,000 State bedrock and surficial geologic maps. Both were expected to be printed in color in 1985.

The MGS began a 5-year project with the Minerals Management Service to determine the stratigraphic framework of the State's nearshore area and evaluate the potential economic deposits. Work began in 1984 on a map of the seafloor of the inner Continental Shelf.

Additional information on publications and MGS projects may be obtained from the Maine Geological Survey, State House Station No. 22, Augusta, ME 04333, telephone 207-289-2801.

REVIEW BY NONFUEL MINERAL COMMODITIES

NONMETALS

Cement.—Shipments increased 41% in 1984 compared with that of 1983, reflecting improved demand from the construction industry. Portland and masonry cement were produced at the Dragon Cement Co. plant in Thomaston. The wet process, coal-fired plant is the only cement manufacturing facility in New England.

Clays.—Late in the year, Royal River Brick Co. Inc. decided to cease clay mining and brick manufacturing operations in Gray, Cumberland County. The company manufactured water-struck brick used primarily in restoration projects. With the closing of Royal River and the termination of clay mining by Dragon Cement in 1983, only one clay mining company remained in operation in Maine. The company mined common clay at two pits, one in Androscoggin County, the other in Cumberland County.

Garnet.—Maine again ranked second nationally in garnet production. Industrial Garnet Extractives Inc. (IGE), West Paris, was one of four garnet producers in the United States. IGE, two companies in New York, and one in Idaho accounted for the total domestic output of 27,672 short tons (State and individual company data are proprietary). U.S. output declined slightly compared with that of 1983, whereas IGE's output increased 6%.

IGE continued modernizing its plant adding new screening, concentrating, and dust collecting equipment and converting from wet to dry processing. The new processing system, in addition to increasing capacity, enabled year-round operation of the plant by eliminating water from the processing cycle. Previously, the plant was often forced to close in winter. The upgrading of the facility was considered an indication of the increasing market demand for garnet for sandblasting and water filtration applications. Health concerns relating to use of silica sand and slag have also boosted the use of garnet in sandblasting, primarily because of garnet's inert composition. IGE also sold a utility grit, a byproduct material of the processing that contained 10% to 15% garnet.

Gem Stones.—Maine ranked fifth nationally in the estimated value of gem stone and mineral specimens sold commercially. Plumbago Mining Corp., which mined tourmaline from a pegamatite on Newry Mountain in 1972 and 1973, planned to renew mining operations at Mount Apatite in 1985.

Peat.—Down East Peat Co. announced plans to construct a $20 million peat-fired electrical generating plant in Deblois, Washington County. Previously, Down East, the State's leading peat producer in 1984, mined sphagnum moss at the 1,000-acre Denbo Heath peat bog primarily for horticultural applications. The new power station, with a 12-megawatt capacity, was expected to be operational in 1986 and provide the power equivalent to that needed for a residential community of 20,000 people. Instrumental in Down East's development plans for the plant was securing a 20-year sales contract with Boston Edison Co. of Massachusetts for about 80% of the electricity. That contract also helped Down East to obtain additional financing for the project. The company also plans to convert about 20% of the peat into pellets for local sales at an estimated price of $70 per short ton.

Nationally in 1984, about 11,000 of the 814,000 tons of peat mined were used as a fuel to generate electricity. The Maine project was expected to add significantly to that total. Maine's peat resources, which included 235 peat deposits covering 73,000 acres of commercial-quality peat portend the possibility of additional development of peat-fired powerplants (see Legislation and Government Programs).

Plans by Signal Cleanfuels Inc. and United States Peat Co. to begin operations failed to materialize. Signal expected to begin construction on a $90 million peat-to-energy plant after receiving preliminary approval in June 1983 for the project from the federally funded Synthetic Fuels Corp. The project again remained on hold in 1984 pending a decision by the U.S. Congress on funding for Synthetic Fuels Corp. U.S. Peat failed to complete environmentally related applications required by the Maine Department of Environmental Protection. The company's plans for this project were unknown at yearend.

Perlite (Expanded).—Grefco Inc.'s acquisition of Chemrock Corp. included Chemrock's plant at Rockland. Grefco, a subsidiary of General Refractories Co., operated

two perlite mines in New Mexico. At the Rockland plant, perlite was expanded and sold locally as a filter aid.

Sand and Gravel.—*Construction.*—Construction sand and gravel production is surveyed by the U.S. Bureau of Mines for even-numbered years only; therefore, this chapter contains only estimates for 1983. Data for odd-numbered years are based on annual company estimates made before yearend.

Output of 7.9 million short tons of construction sand and gravel in 1984 was the highest reported since 1979 when about 11 million tons were produced. In 1979, the unit price of sand and gravel was $1.85 (f.o.b. plant); in 1984, it was $2.44. Nationally, the unit price was $2.27 in 1979 and $2.90 in 1984.

Table 4.—Maine: Construction sand and gravel sold or used in 1984, by major use category

Use	Quantity (thousand short tons)	Value (thousands)	Value per ton
Concrete aggregate	552	$2,112	$3.83
Plaster and gunite sands	W	W	3.46
Concrete products	W	W	3.00
Asphaltic concrete	607	2,350	3.87
Road base and coverings	2,580	4,446	1.72
Fill	637	1,422	2.23
Snow and ice control	357	836	2.34
Railroad ballast	W	W	4.17
Other	3,152	8,060	2.56
Total or average	7,885	[1]19,228	2.44

W Withheld to avoid disclosing company proprietary data; included with "Other."
[1]Data do not add to total shown because of independent rounding.

Table 5.—Maine: Construction sand and gravel sold or used by producers, by county

(Thousand short tons and thousand dollars)

County	1979		1984	
	Quantity	Value	Quantity	Value
Androscoggin	1,019	2,050	575	2,095
Aroostook	1,109	1,855	1,028	2,487
Cumberland	1,936	3,476	1,193	3,168
Franklin	345	851	165	526
Hancock	552	1,182	578	1,266
Kennebec	593	908	417	622
Knox	395	966	353	1,372
Lincoln	300	478	319	625
Oxford	170	288	236	589
Penobscot	1,694	3,106	782	1,668
Piscataquis	246	489	145	243
Sagadahoc	83	124	304	395
Somerset	458	782	345	1,194
Waldo	588	1,077	259	701
Washington	335	506	250	343
York	1,200	2,396	935	1,935
Total[1]	11,022	20,534	7,885	19,228

[1]Data may not add to totals shown because of independent rounding.

The eight leading producers (see table 6) in 1984 accounted for 50% of the State's production and operated 43% of Maine's 218 active pits. The Maine Department of Transportation, with operations in 13 of the State's 16 counties, produced 15% of the State's total output from 70 pits.

Stone.—Stone production is surveyed by the Bureau of Mines for odd-numbered years only; therefore, this chapter contains only estimates for 1984. Data for even-numbered years are based on annual company estimates made before yearend.

Crushed.—Output of crushed stone increased 53% in 1984, recovering in line with the improved demand from the State's construction and cement industries. Limestone, sandstone, marl, and traprock were the

types of stone mined.

Dimension.—The State's dimension stone industry, inactive since the 1970's, resumed production in 1983 at two granite quarries, one on Deer Island, the other at Jonesport. Reopening of two more dormant quarries on Vinalhaven Island in 1985 was pending a marketability study on demand for granite facing blocks.

[1]State Mineral Officer, Bureau of Mines, Pittsburgh, PA.
[2]State Geologist and Director, Maine Geological Survey, Augusta, ME.
[3]Geologist, Maine Geological Survey, Augusta, ME.

Table 6.—Principal producers

Commodity and company	Address	Type of activity	County
Cement:			
Dragon Cement Co.[1]	Thomaston, ME 04861	Quarry and plant	Knox.
Clays:			
Morin Brick Co	Mosher Rd. Gorham, ME 04038	Pits and mills	Androscoggin and Cumberland.
Garnet:			
Industrial Garnet Extractives Inc	Box 56A West Paris, ME 04289	Mill	Oxford.
		Quarry	Franklin.
Peat:			
Down East Peat Co	Star Route Deblois, ME 04622	Bog and plant	Washington.
Pioneer Peat Moss Co	Columbia Falls, ME 04623	do	Do.
Perlite (expanded):			
Grefco Inc	Box 177 Thomaston, ME 04861	Plant	Knox.
Sand and gravel (construction):			
Cianbro Corp	Box D Pittsfield, ME 04967	Pits and plants	Androscoggin, Franklin, Hancock, Somerset.
Harry C. Crooker & Sons Inc	R.F.D. 4, Old Bath Rd. Brunswick, ME 04011	do	Lincoln and Sagadahoc.
R. J. Grondin & Son	Rural Route 4, Box 65 Gorham, ME 04038	Pits	Cumberland and York.
Lane Construction Corp.[1]	Box 627 Presque Isle, ME 04769	do	Aroostook, Penobscot, Waldo, Washington.
Madawaska Brick & Block Co	R.D. 1, Box 250 Madawaska, ME 04765	Pit and plant	Aroostook.
Maine Department of Transportation.	Augusta, ME 04333	Pits and plants	Androscoggin, Aroostook, Franklin, Hancock, Kennebec, Knox, Lincoln, Oxford, Penobscot, Piscataquis, Sagadahoc, Waldo, Washington.
Portland Sand & Gravel Co. Inc	Gray Rd. Cumberland, ME 04021	Pit and plant	Cumberland.
Tilcon Inc	Box 209 Fairfield, ME 04937	Pits and plants	Cumberland, Somerset, York.
Stone:			
Crushed:			
Blue Rock Industries	58 Main St. Westbrook, ME 04092	Quarries and mill	Cumberland and Kennebec.
The Cook Concrete Co	150 Causeway St. Boston, MA 02114	Quarry and mill	Cumberland.
Lime Products Corp.	Box 357 Union, ME 04862	Quarries and mill	Knox.
Dimension:			
Maine-New Hampshire Granite Corp.	Box 207 Milford, NH 03055	Quarry	Washington.
New England Stone Industries Inc.	Providence Pike Smithfield, RI 02917	do	Hancock.

[1]Also stone.

*U.S. GOVERNMENT PRINTING OFFICE: 1986-491-457:20105